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the pole in March, returning twice to his base for supplies to equip the advanced station, where he will spend the coming winter; but the 'Windward' only broke out of the ice on September 7th, and her crew suffered badly from scurvy.

Major Leonard Darwin read a report on the Sixth International Congress and sketched the work done at that gathering.

In some respects the most valuable papers submitted were those dealing from the geographical standpoint with various special sciences. Astronomical geography was represented by Mr. W. B. Blaikie's remarkably ingenious Cosmospheer, a union of the terrestrial and celestial globes on which all problems in practical geography could not only be worked out, but demonstrated directly to the eye.

Oceanography had as its exponent the first British authority, and probably the first authority in the world, on the whole subject, Dr. John Murray, who discoursed on the general circulation of the oceans. Mr. H. N. Dickson demonstrated, by a series of exceptionally fine lantern slides, the results of his recent discussion of observations made on the conditions of the North Atlantic, bringing out the close relation between the axis of relatively high water temperature in the ocean and the position of the North Atlantic anti-cyclone, by which the climate of Europe is largely conditioned.

In climatology M. Ravenstein presented the report of a Committee of the Section on the investigation of the climate of tropical Africa by means of instruments supplied by the Association and employed by government officials, missionaries and traders in various parts of the continent. Biological geography was well represented by Mr. A. Trevor-Battye, who, in the course of a paper on the 'Struggle for Existence under Arctic Conditions,' insisted on the probability of the theory of instinctive return to an ancestral home being the compelling power in

the northern migration of birds for the breeding season.

And in history Mr. Myers succeeded in making clear the geographical conceptions of Herodotus by reconstructing, from the writings of the 'Father of History,' maps such as might have been used in the first discussion of these views.

HUGH ROBERT MILL,
Recorder of Section E.

LONDON.

SCIENTIFIC NOTES AND NEWS.

THE SMITHSONIAN EXHIBIT AT ATLANTA.

THE Government building at the Cotton States Exposition contains collections of great interest exhibited by the Smithsonian Institution and the National Museum. According to the pamphlet published to accompany the exhibit an attempt has been made:

1. To give as good an idea as possible of the character of the treasures which are preserved in the Museum, by presenting an epitome of its contents, with contributions from every department.
2. To illustrate the methods by which science controls, classifies and studies great accumulations of material objects, and uses these as a means for the discovery of truth.
3. To exhibit the manner in which collections are arranged, labeled and displayed in a great museum.
4. To afford as much instruction and pleasure as possible to those who may visit the Atlanta Exposition, to impress them with the value of museums as agencies for public enlightenment, and thus to encourage the formation of public museums in the cities of the South.

These objects seem to be admirably accomplished by the collections which are exhibited under the following departments: *Mammals*, including, in addition to 43 specimens illustrating range and classification, 12 of the most characteristic types of the human species. *Birds*, represented in their natural surroundings. *Reptiles*, showing the poisonous snakes of the United States. *Fishes*, including 73 of the most characteristic species. *Comparative Anatomy*, arranged by Mr. F. A. Lucas, is intended to illustrate

the structure of a considerable number of the most interesting types of the animal kingdom. *Marine Invertebrates*, in part, a continuation of the Department of Comparative Anatomy. *Mollusks*, arranged by Mr. C. T. Simpson. *Insects*, selected from the rich entomological collections of the Museum by the late Prof. C. V. Riley. *Paleontology*, including 116 species of North American fossils. *Geology*, exhibiting the occurrence of gold and silver in nature. *Minerals*, representing chemical and physical relations. *Botany* and *Materia Medica*. *Prehistoric Anthropology* and an alcove exhibiting the origin and significance of games. *Arts and Industries* and *Technology*, with special reference to industrial development. Ethnology offers exhibits of special interest, in part from the Bureau of American Ethnology prepared under the direction of Dr. W. J. McGee, and in part from the Department of Ethnology selected by Prof. O. T. Mason.

AN account of the Smithsonian Institution, its origin, history, objects and achievements, has been prepared by Dr. G. Brown Goode, intended to accompany the collective exhibit of the Smithsonian Institution and its dependencies at Atlanta. This should be read not only by visitors to the Exposition, but also by all who are interested in the Smithsonian Institution and the advancement of science in America. Dr. Goode concludes the article with the following paragraphs:

At the time of the Smithson bequest the endowment of research had scarcely been attempted in America. There were schools and colleges in which science was taught, and certain of the teachers employed in these institutions were engaged in original investigation. There were a few young and struggling scientific societies, very limited in extent and influence, but at that time the chief outcome of American scientific work. Science in America was an in-

fant in swaddling clothes. Fifty years have passed and American science now stands by the side of the science of Great Britain, of Germany, of France, a fellow worker, competing on an equal footing in nearly every field of research.

The Smithsonian Institution did what was, at the time of its organization, absolutely indispensable to the rapid and symmetrical development of American scientific institutions, and but for it science in America would no doubt have advanced with much less rapidity. It is also certain that the progress of American science has had an immense influence upon the welfare of America in every department of intellectual and industrial activity and a reflex action upon the scientific and industrial progress of the entire world.

In 1896 the Smithsonian Institution will celebrate the end of its first half century. A special volume will be published to commemorate the event, and two memorial tablets will be erected in honor of the founder in the city of Genoa, where he died, June 26, 1829; one in the English church, and one upon his tomb in the beautiful little English cemetery on the heights of San Benigno.

It is interesting to remember that in September, 1896, will occur not only the semi-centenary anniversary of the birth of the Institution founded in the City of Washington by Smithson, but also the centenary of the delivery of that immortal address in which Washington so forcibly recommended to his countrymen to promote as an object of the highest importance institutions for the increase and diffusion of knowledge.

GENERAL.

READERS OF SCIENCE will remember criticisms made in the journal (June 21, 1895, p. 682) regarding the illustrations in *The Standard Natural History*. The full bench of the Supreme Court of the State of Massa-

chusetts made a decision on October 19, which concerns the matter, and is of much scientific importance. Action was brought by Herman Julius Meyer, of Leipsic, publisher of Brehm's *Thierleben* against Estes & Lauriat, and S. E. Cassino & Co., for the breach of a contract made by them with the plaintiff in 1883, for the sale of plates to publish a natural history. By the terms of the contract the defendants were not to sell or dispose of the plates. It was for a breach of this provision that this suit was brought. The plaintiff claimed to be entitled to recover a \$30,000 penalty, as provided in the agreement, for a breach of the contract, as well as damages for the breach. The Judge at the trial in the Superior Court held that he was not entitled to recover. The decision now given holds that the plaintiff cannot recover the amount of the penalty, but is entitled to compensation for the breach of the agreement in disposing of the plates.

PROF. G. MACLOSKIE, of Princeton, has published in the October number of the *Bulletin of the Torrey Botanical Club* an article on 'Antidromy in Plants,' previously read before the Botanical Section of the American Association. The author reports the discovery that all species of Phænogams appear to have two castes of individual plants, born of the same mother-plant, and differing by being slightly curved in opposite directions. Phyllotaxy is only one of the manifestations of this: and all plants seem to have heterodromous phyllotaxy between the different individuals of a species, and homodromous phyllotaxy within an individual and with all the quasi-individuals produced from it by cuttings or bulbs. Thus half the members of a species are 'antidromous' with the other half, the difference apparently arising from their being derived from seeds borne on opposite margins of a carpellary phyllome. In some cases plants derived from the same root-stock, as Iris,

Colla-lily and Rush, are relatively antidromous. Antidromy is a primitive character, affecting mother-seed, embryo, stem, leaves and inflorescence. It is frequently disguised and concealed by secondary changes, as twining of stems and contortions of flowers, spreading out and opposition of leaves. It affords a ready solution of puzzling problems, and is useful in suggesting new problems and new lines of discovery.

THE Huxley Memorial Committee is expected to take prompt action in the matter of organizing an American Committee. The latest reports from Professor Howe indicate that substantially all the American scientific men who have been thought of as possibly willing to serve have, so far as approached, signified their willingness to do what they can in the matter. The biologists are likely to be well represented, particularly, and the leaders in scientific work in every field will do their full share. It is hoped and anticipated that the contributions from the United States will rival those of Great Britain and exceed those of any other nation.

At a meeting of the Graduate Students' Association of the Johns Hopkins University, on October 11th, brief addresses were announced by Professor Brooks, on 'Huxley;' by Professor Rowland, on 'Helmholz;' by Professor Welch, on 'Pasteur,' and by President Gilman, on 'Dana.'

Nature states that a commission has been appointed charged with undertaking a systematic geological survey of Cape Colony. The commission intends to prepare at once a bibliography of all previous publications relating to the geology of the Colony.

THE late Professor Babington, of Cambridge, bequeathed to the University his entire collection of plants. His botanical library was presented to the University in 1888.

PROFESSOR E. E. BARNARD, of the Lick Observatory, has removed to Chicago, although the Yerkes Observatory will not be ready for use during the coming year.

PROFESSOR RAOULT, of Grenoble, has been awarded, for his chemical researches, the biennial prize (20,000 fr.) of the French Institute.

A FORMULA occurring in the account of Dr. Artemus Martin's paper read before the American Mathematical Society appears in SCIENCE, No. 39, Sept. 27, 1895, p. 395, as

$$z=(p^2+q^2)(r^2+s^2), \pm 2rs(p^2-q^2),$$

instead of

$$z=(p^2+q^2)(r^2+s^2) \pm 2rs(p^2-q^2)$$

DR. ROBERT BELL, assistant director of the Dominion Geological Survey, states that he has discovered a river larger than any other stream in the province of Quebec, together with a great area of timber land and a country suitable for agricultural purposes. This new river, for which the Indians have no name, is larger than the Ottawa, and Dr. Bell affirms it to be the sixth of the great rivers of the world. Its average width is considerably over a mile, and it has expansions many miles in width. It flows through a level country and is very deep. The river is five hundred miles in length, and would be navigable for steamers until toward James Bay, where there are great rapids.

DR. EDWARD W. BEMIS, lately professor in the University of Chicago, has become associate editor of the *Bibliotheca Sacra*, giving especial attention to applied ethics, economics and civics.

ACCORDING to the New York *Evening Post*, Prince Henry, of Orleans, in a letter to the Société de Géographie, gives an account of his journey from Mong-tse to Ta-li-fu. In this hitherto unexplored country, 750 miles in length, he has taken 500 photographs and collected 300 zoölogical specimens. He will return to France next January.

THE Roxburghe Press, London, is about to issue the *Nursing World and Hospital Record*, a journal for trained nurses, who, it is calculated, number nearly 30,000 in Great Britain alone.

BANGS & Co., New York, announce the sale of the library of the late William Berrian, including many scientific works.

SPON & CHAMBERLAIN announce 'Polyphase and Electric Currents and Alternate Current Motors,' by Professor Silvanus P. Thompson. The subject is dealt with under the following diversions: Generators for Polyphase Currents; the Properties of the Rotatory Magnetic Field, with some account of its historical development; the Theory, Construction and Performance of Polyphase Motors; the Theory and Construction of Motors operated by ordinary single-phase Alternate Currents; together with some account of Polyphase Transformers, and of the measurements of power in polyphase systems. The same publishers announce an elementary text-book on 'Steam Engines and Boilers,' by Prof. J. H. Kinealy, of Washington University.

At the International Congress of Otology held recently in Florence many papers were presented, but they nearly all belonged to clinical medicine. The Sixth Congress will be held in London in 1899.

It is reported that petroleum wells in Java are very productive and are becoming important commercially.

THE English Consul in St. Paul de Loanda reports that the Trans-African Railway is now open for a distance of 300 km. and will be continued to Ambaca.

MR. FRANKLIN L. POPE, known for his contributions to electrical science, was killed on October 13th (aet 66), from electrical shock while examining the connections in his own house. In 1870 Mr. Pope invented with Mr. Edison the one-wire printing telegraph, and in 1872 he invented the rail

circuit for automatically controlling block signals, a patent largely in use on the principal American railroads. He was also the author of the 'Electric Telegraph' and 'Life and Work of Joseph Henry,' and was for several years editor of the *Electrical Engineer*. In 1885 he was elected president of the American Institute of Electrical Engineers.

UNIVERSITY AND EDUCATIONAL NEWS.

THE Stanford estate has just won its second victory in the suit of the Government to recover \$15,000,000 from its funds. A demurrer by the attorneys for the estate, alleging want of equity was sustained by United States Circuit Judge Ross, and this decision was sustained by the United States Circuit Court of Appeals, Judges Gilbert, Hawley and Morrow. The case goes to the Supreme Court for final decision, but it is felt that this decision must be in favor of the estate. The interest in the matter arises from the fact that this money was intended by Senator Stanford as the ultimate endowment of Leland Stanford, Jr., University, and the establishment of the Government's claim would seriously cripple the future of the University.

THE British Treasury has decided that the annual grant of which King's College, London, was deprived under the late Government may be restored to the College next year without any stipulation as regards tests.

ABERDARE-HALL, Cardiff, founded in 1885 in connection with the South Wales University at Cardiff, for the training of women students, has now been formally dedicated.

THE registration in the freshman class of the University of Minnesota at the present time has reached a total of 628. This number is distributed as follows: College of Science, Literature and the Arts, Classical 43, Scientific 126, Literary 114, Teachers' 25—308 in all; College of Engineering, Met-

allurgy and the Mechanic Arts, all courses 64; College of Agriculture, 4; College of Law, 107; Colleges of Medicine, Medicine and Surgery 71, Homeopathic Medicine and Surgery 8, Dentistry 48, Pharmacy 18.

The Faculty of the College of Engineering, Metallurgy and the Mechanic Arts, University of Minnesota has recently been strengthened by the addition of two men; Frank H. Constant, assistant professor of structural engineering, comes from the Osborn Company, Civil Engineers, Cleveland, where he held the position of assistant engineer and obtained a wide experience in designing and constructing bridges, roofs, elevated railroad tracks and other structures. Between graduation and joining Frank C. Osborn in the above named company he was in the employ of the King Bridge Company. Mr. Constant graduated with distinction at the University of Cincinnati in 1891, after taking his mathematical and professional training under Henry T. Eddy and Ward Baldwin. H. Wade Hibbard, assistant professor of machine design, is a graduate of Brown University and Sibley College, Cornell University, where he won high distinction. After graduating from the last named institution he entered the employ of the Pennsylvania Railroad Company and remained with the chief mechanical engineer of that system for three years, directing construction and repair in the Juniata shops, going to England and the Continent to investigate railway practice and performing other responsible duties. At the end of that time Mr. Hibbard was secured by the Lehigh Valley Railroad as chief draughtsman, which responsible position he held until his call to Minnesota.

It is stated that Birmingham is spending £50,000 on a central technical institution; Manchester, £130,000; Salford, £55,000; West Ham, in the East of London,